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(54) DATA PROCESSOR UTILIZING TELEVISION BROADCASTING

(57)Abstract:

PROBLEM TO BE SOLVED: To effectively utilize the execution means of a computer programto facilitate the selecting operation of a teletext broadcasting program and to enlarge the function of a teletext broadcasting signal processing circuit.

SOLUTION: The computer program transmitted in a teletext broadcasting signal form and a selection information conversion table for selecting the teletext broadcasting program are stored in a program RAM 42a CPU 27 is operated based on the program and a menu screen for selecting the teletext program displays simplified selection information. When a viewer selects the simply expressed selection information it is converted to original selection information by the conversion table and is shifted to the actual reception processing of the

teletext broadcasting.

CLAIMS

[Claim(s)]

[Claim 1]A data processing device using television broadcasting characterized by comprising the following.

A reception means which receives a data-broadcasting program which multiplex is carried out to a DCH which is contained in a television broadcasting signal and became independent of a video voice signaland is transmitted to it.

A demodulation means which restores to a computer program contained in said data-broadcasting program.

A teletext signal processing means which processes data of a teletext program which multiplex is carried out to a DCH which became independent of said data-broadcasting programand is transmitted to it.

An operation input processing means for incorporating a user's operational inputand a program execution means to perform data processing based on said computer program to which it restoredand said operation input processing meansHave a displaying means and said program execution meansHave a data processing means for displaying on said displaying means simple expression selection information which identified a kind of said teletext program based on said computer programand. So that it may decode this and a teletext program corresponding to the simple expression selection information concerned may be processedwhen a user transaction data which said operation input means incorporated is the simple expression selection information of said teletext program. A switching means for setting up said teletext signal processing means and displaying the teletext program concerned on said displaying means.

[Claim 2]Said program execution means conditions which display on said displaying means simple expression selection information which identified a kind

of said teletext program based on said computer programA data processing device using the television broadcasting according to claim 1 being a case where a user transaction data which said operation input means incorporated shows menu indication operation.

[Claim 3]Said program execution means conditions which display on said displaying means simple expression selection information which identified a kind of said teletext program based on said computer programA data processing device using the television broadcasting according to claim 1 being a case where a command in which said computer program which answered an operational input starts menu application which it has in a receiving set beforehandand to carry out is published.

[Claim 4]Said program execution means is shared with data processing of said teletext signal processing meansand a control sectionA data processing device using the television broadcasting according to claim 1 performing procedure by said computer programand procedure for character multiple-signal processing by time sharing.

[Claim 5]It has further a communication control means which communicates with a distant office via a communication line when controlled by said program execution meansWhen a user transaction data which said operation input means incorporated is the directions information which wishes an on-line serviceA data processing device using the television broadcasting according to claim 1wherein said program execution means is further provided with a means to incorporate data from said communication line via said communication control means.

[Claim 6]A data processing device using the television broadcasting according to claim 5wherein a means to incorporate said data contains a means to incorporate an additional program further to a computer program contained in said data-broadcasting program.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates data broadcasting broadcast by including in a television broadcasting signal to the data processing device using reception and the television broadcasting which is refreshableutilized this data broadcasting furtherand extended the function.

[0002]

[Description of the Prior Art]These daysteletext which multiplexes and transmits a character and graphic data to the usual television broadcasting signal is realized. In teletextthe teletext program of a weather reportstocksnewsa sportTV program guideetc. existsfor example. And if a certain channel is received and the table-of-contents screen of a teletext program is displayed by selection operationit is a mechanism in which the item of a weather reportstocksnewsa sportTV program guideetc. is displayed on this table-of-contents screenand a program number is displayed beside this item. Thereforea televiewer will input the program number of the program for which it wishes by remote control operation etc. Howeversince a program number is two or more figuresthis operation tends to produce an input mistake. If a channel changesthe program number which differs from an other station also with the same weather report by a broadcasting station is set upand the televiewer has to operate itchecking a two or more digits program numberand is inconvenient each time.

[0003]The receiver which provides the button about the item simplified uniquely in an operation remote control is also developed without on the other hand using the table-of-contents program screen in the teletext program broadcast. The program number of the teletext of a predetermined channel is preset by the predetermined button (stocksnewsfor sports) of the remote control in this receiver. There is also a free buttonand a televiewer cannot be based on a genre at thisbut arbitrary program numbers can also be preset.

[0004]It is made to display on a screen by using the simplified item as a menu

screen further againand the teletext receiver which was made to perform program selection by the cursor operation of the operation remote control is also developed.

[0005]A present television broadcasting program and teletext are a method which provides a target with information from a television station on the other hand to a televiewer. Thereforewhen a shopping information program is broadcast by a teletext in the case of TV shoppinga televiewer takes to a memo the product number for which it wishes while looking at the character by which a screen display is carried outthe telephone number of a mail-order firmetc.and he will telephone using telephonelooking at the memo. Also when giving a televiewer a questionnaire in a programthe response from a televiewer takes a telephone number etc. to a memoand it will be performed using telephonelooking at the memo. In such a caseproblemssuch as a wrong phone call at the time of the wrong phone call by an incorrect dial occurringor making a note of a telephone number accidentallyoccur.

[0006]

[Problem(s) to be Solved by the Invention]As described abovewhen choosing a teletext programa televiewer inputs a program number by remote control operation etc.but since a program number is two or more figuresit is easy to produce an input mistake. If a channel changesthe program number which differs from an other station also with the same weather report by a broadcasting station is set upand the televiewer has to operate itchecking a two or more digits program numberand is inconvenient each time.

[0007]A subject name is immobilizationand the alternative form of the conventional teletext program cannot be changed into new contentsand is rigid. Since the program number to the subject name of the teletext office of a specific channel is preset in the method which presets a simplification itemWhen viewing and listening to the teletext of other channelsif it remained as it isa meaning was not madei.e.the program number newly needed to be represet for every channel.

[0008]As a data-broadcasting program transmitted in a teletext by the DCH which

became independent of a teletext programWhen computer program data is transmitted from the broadcasting station sidea program execution means to execute this computer program is formed in a receiver and a televiewer gives an operational inputA program execution means performs dialing of telephone automatically via a communication control meansand the proposal that I will make it transmit a televiewer's input data automatically is performed. If it does in this waya wrong phone call will also decrease and the response time to a collection office will also become close to real time. The expansion of a character multiple-signal processing circuit becomes possible.

[0009]Soin this inventionthe execution means of the above-mentioned computer program is utilized effectivelyand the selection operation of a teletext program is easyand it aims at providing the data processing device using the television broadcasting which utilizes data broadcasting and obtained functional expansion.

[0010]

[Means for Solving the Problem]That this invention is characterized by comprising the following bothSo that it may decode this and a teletext program corresponding to the simple expression selection information concerned may be processedwhen a user transaction data which said operation input means incorporated is the simple expression selection information of said teletext program. A thing including a switching means for setting up said teletext signal processing means and displaying the teletext program concerned on said displaying means.

A reception means which receives a data-broadcasting program which multiplex is carried out to a DCH which is contained in a television broadcasting signal and became independent of a video voice signaland is transmitted to it.

A demodulation means which restores to a computer program contained in said data-broadcasting program.

A teletext signal processing means which processes data of a teletext program transmitted by a DCH which became independent of said data-broadcasting program.

An operation input processing means for incorporating a user's operational inputand a program execution means to perform data processing based on said computer program to which it restoredand said operation input processing meansA data processing means to have a displaying means and for said program execution means display on said displaying means simple expression selection information which identified a kind of said teletext program based on said computer program.

[0011]According to this meansa program execution means of a computer program is utilized effectivelyand a televiewer will become selectable without an error easily about a teletext program of hopeif easy operation is performed.
[0012]
[Embodiment of the Invention]Hereafterthis embodiment of the invention is described with reference to drawings. The example of the system by which the data processing device using the television broadcasting which is this embodiment of the invention was applied is shown in drawing 1. By utilizing the present function and telephone communication function of teletextto the one way broadcast of television broadcastingthis system added the telephone communication functionextended the data transmission facility of the uphill directionand has realized the two-way communication function as the whole.
[0013]The overall system is constituted by the television receiver 11the broadcasting station 12the telephone network 13and the network including the collection office 14. The broadcasting station 12 is broadcast synchronizing with the usual television program using the channel of a teletext by making the computer program (script) for realizing bidirection into a data-broadcasting program. Or it is repeatedly broadcast in predetermined broadcasting hours as independent broadcast. this script is a kind of application program which described the advance procedure of the two-way communication systemand is superimposed during the vertical retrace line of a TV broadcast signal -- it is transmitted.

[0014]This script is performed by the program execution system (script decoder) which was stored in the memory of the television receiver 11 which received the TV broadcast signalfor examplewas built into that television receiver 11. This script decoder carries out a screen display of the emblem "i" which shows that the present program is a bidirectional teletext programnotifies a televiewer of itstarts script execution according to the operational input from a televiewerand answers presenting of program supplementary informationetc.

[0015]Although a response may be finished in self-sufficiency in the television receiver 11it is also possible to reflect real time in the program content which sends the result of a response to the computer systems (collection office 14) with which every place were equipped via the telephone network 13and the broadcasting station 12 provides depending on the case.

[0016]This system is carrying out expansion of the existing teletext system by software. The response from a televiewer is sent to a collection office via a telephone network. Even if a script is added to teletext and it broadcasts itthe present TV broadcasta teletextand a television receiver are not affected at all.

[0017]The television receiver 11 is equipped with a script decoder and a modem in order to realize a bidirectional function in addition to the usual TV broadcast receiving circuit containing a character multiplex decoder. A script decoder takes out a script out of the TV broadcast signal sent from the broadcasting station 12and realizes two-way communication by performing it. In order to send uphill datawhen a televiewer answersit answers using the remote control for TV operation. When data is transmitted to the collection office 14an auto dial is performed and it is connected to the collection office 14 by the modem connected to the television receiver 11. After it may be transmitted immediately or uphill data waits for night etc.it can also be transmitted.

[0018]Since the modem added to the television receiver 11 has a function dialed automaticallythe dial control by a televiewer is unnecessary to an uphill data-communications sake. The telephone number of the auto-dial point is embedded and transmitted to the script from the broadcasting station 12 side for every

bidirectional teletext program. This one telephone number has a case of the existing yes pluralityand when it is pluralitya televiewer can choose the destination.

[0019]A script decoder is realized by the processor which executes a computer program. Howeversince the processor is usually built also in the character multiplex decodera script decoder is realizable by carrying out expansion of the character multiplex decoder by software actually. Thereforea script decoder comprises a character multiplex decoder and a program ROMand is sharing many circuits with a character multiplex decoder.

[0020]When broadcasting the program of the televiewer participation method of making a televiewer's response reflect in a program etc.the broadcasting station 12 inserts a script in the broadcasting signal containing the usual image and soundand transmits to it. The program production system for reproduction of a script and insertion can consist of a personal computer and a multiplexing device.

[0021]The broadcasting station 12 broadcasts by inserting a script in a broadcasting electric-wave in the form added to the usual program. The computer program to add is divided roughly into what third partiessuch as what the broadcasting station itself makesan advertising agencyand a mail-order firmmake and provide. The thing of broadcasting station work has what can be prepared a prioriand a thing live inserted like [at the time of a sport relay broadcast].

[0022]Herethe composition of a script is explained. A script is created by the making system of the broadcasting station 12and is sent out with the usual picture and sound. The script is realized as a set of the following objects.

[0023](1) background and display raw material (2) operation-buttons (3) character string (4) picture etc. -- a complementary procedure (procedure) can be given to each object and this procedure is described by enhanced BASIC etc. This language gives usual BASIC the control instruction for two-way communication.

[0024]At the time of execution of this scriptscreen constitution elementssuch as

the background of a screen and operation buttonsare displayed first. A televiewer's selection of the operation buttons will start the button compatible program.

[0025]The disposal method of response data is beforehand registered into the collection office 14and the redistribution of the contents collected according to this can be carried out to a broadcasting stationan advertising agencya sponsora mail-order firmetc.

[0026]The gestalt of an interactive program realizable by this two-way communication system can be divided roughly into the following three.

(1) Carry out the selection display of the additional information about a supplement information program and a door buster.

[0027]- Display selectively the data at the time of a sport relay broadcast.

- Display a program content.

- Remember cooking Lisa Py and display later.

[0028]- React to the answer to a question in an early-childhood-education program.

- React to a televiewer's answer in a quiz show.

(2) Response feedback program (a collection office is used)

- Take politicseconomyand the questionnaire about a social report.

[0029]- Take a questionnaire by a sports program.

- Hold a correct answer person's statistics displayand a tournament by a televiewer participating quiz show.

(3) A program with a transaction (a collection office is used)

- Accept an order by a server (collection office) by TV shopping.

[0030]- Receive a catalog demand etc. in a server (collection office) by advertisements with a demandsuch as information.

- For an audience rating surveyacquire a televiewer's consent and send view program data to a server (collection office).

[0031]The concrete circuitry of the data processing device formed in the television receiver 11 and a script decoder is shown in drawing 2. The video

signal of a receiving channel is supplied to the synchronizing separation part 22 and A/D converter 23 via the input terminal 21. Multiplex [of the data for bidirectional digital communications] is carried out to the vertical-retrace-line period of the video signal (drawing 3 explains these signal forms). Waveform equalization of the data digitized with A/D converter 23 is carried out by the waveform equalization section 24and it is introduced into data incorporation and the error correcting section 25. The waveform equalization section 24 compensates degradation in the middle of transmission of the video signal changed into the digital signalseparates the digital broadcasting signal by which multiplex is carried out to the video signaland outputs the multiplexing data and the clock in it. Data incorporation and the error correcting section 25 incorporate multiplexing data into buffer RAM26 by 8 bitwises synchronizing with a clockand performs an error correction.

[0032]CPU27 operates on the basis of the fixed program of program ROM28. The character font for performing a character representation is stored in character font ROM29and alphabetic data corresponding by addressing the character of hope can be read to this ROM29.

[0033]The synchronized signal for a display in sync with a television receiver is introduced into the input terminal 30and the display control part 31 is supplied. The display control part 31 synchronizes the data of the display memory 32 with reproduction of a television pictureand reads itand it performs processing which writes an indicative data in the display memory 32 in response to the write instruction from CPU27. The data read from the display memory 32 is supplied to the color map memory 33makes an indicative data an address inputand outputs each level data of primary signal RGB corresponding to the address concerned. This level data is changed into an analog RGB signal with D/A converter 34and is drawn from an output terminal as a status signal. This status signal is displayed on a display as a television picture signal which it was compounded with the television picture signal by the synthesizing means which is not illustratedand graphics superimposed.

[0034]From the input terminal 36the manipulate signal by the televiewer from a remote control operating section is inputted. Via the operational input interface (I/F) 37this manipulate signal is incorporated into CPU27 and analyzed.
[0035]38 is abnormal conditions and a demodulator (modem)constitutes the communication control part and is connected to the telephone line 40 via the line connection part 39. The line connection part 39 controls connection of a circuitand cuttingand is controlled by CPU27.
[0036]CPU27 is connected to each functional block 25i.e.data incorporation and error correcting sectionand program ROM28character font ROM29operational input I/F37the display control part 31the modem 38etc. via the bus line. Furthermorework RAM41program RAM42and the nonvolatile memory 43 are connected to the bus line. Program RAM42 is a memory which stores the computer program transmitted from a broadcasting stationAccording to a televiewer's operationaccording to the interpreter in the fixed program stored in ROM28the contents of this computer program can be interpreted and the procedure of this computer program can be performed. When the peculiar identification number (ID) of this receiving terminal (decoder) is stored in the nonvolatile memory 43for exampleorder data is transmitted to the collection office 14 by TV shopping etc.this peculiar identification number is used. In the collection office 14the order Lord will be distinguished by ** which recognizes ID.
[0037]The period when teletext data is transmitted in TV teletext signal of a hybrid transmission system is shown in (A) of drawing 3and (B). namelyteletext data -- the [of a vertical-retrace-line period] -- the [14H (the 277H) -] -- the [16H (the 279H) and] -- 21H (the 284H) is overlapped. since there is a margin in which multiplex is possible in this vertical-retrace-line period about data further -- the -- the [10H (the 273H) -] -- multiplex [of the script mentioned above to 13H (the 276H)] can be carried outand it can be transmitted. Although it may carry out multiplex [of the script] to a different position in this way from the present character multiplex positionit may be transmitted to the same position as the present character multiple signal by time sharing. Teletext data can be put on

one sub channel of a voice multiple signalit can also transmitand the data from an FM reception part will be incorporated in this case.

[0038]The above-mentioned script has described the procedure in which a televiewer enables it to choose a teletext program simplyand attaches for it and explains it to the following functions. In drawing 4if a televiewer performs program execution command operation (Step S1) for teletext program selection through a remote control etc. firstthe menu screen of a teletext program will be displayed on a screen (Step S2). As this menu screen is shownfor example in drawing 5 (A)itemssuch as a weather reportstocksnewsa sportTV program guideand the total table of contentsare displayed. And the selection information (this example 123--) of simple expression is displayed on that right. Nexta televiewer inputs the selection information beside the item through a remote control etc.in order to choose the program of hope (Step S3). In this caseeven if it does not input a number in particularonly a subject name is displayed and it may be made to choose with cursor. A televiewer's operation is easy for this simple expression selection informationand it is the information simplified so that a failure might not be producedand in order to receive the teletext program corresponding to an original itemit is necessary to decode the above-mentioned simple expression selection information to original selection information (step S4). And the decoded selection information is given to data incorporation and the error correcting section 25 as new selection informationand the display control part 31 also changes to character multiple-signal mode management.

[0039]When decoding is performed in step S4the translation table (for exampledrawing 5 (B)) stored in program RAM42 is utilized. This translation table is built into a part of computer program as processed dataand is transmitted to it. A system stores this data and builds it automatically with a translation table. What is necessary is just to choose the program selection information which the televiewer regarded the menu screen as it being such a methodand was simplifiedand there is also no mistakeand it becomes easy operation.

[0040]The program execution means is almost shared with data processing of a

teletext signal processing meansand a control sectionand this system will perform procedure by a computer programand procedure for the Monju multiple-signal processing by time sharing.

[0041]Although the data for teletext program menus (and or graphic data) was transmitted through broadcast to a part of computer program and explained in the above-mentioned means as that in which drawing processing is carried out by the computer program concernedIt may have menu application in the receiving set beforehand. Since a drawing indication of the graphic image of drawing 5 (A) is automatically givenfor example with this menu application when menu application existswhat is necessary is just to transmit update information (a character and corresponding simple expression selection information) as a multiplex-broadcasting sideand a burden becomes light. What is necessary is just to start menu application at Step S1 of drawing 4when such menu application exists. Thusthis system can shift to a hard teletext signal-processing state from under rule by a computer program.

[0042]Furthermoreaccording to this systemthe communication control means of the modem 38 and the line connection part 39 grade is established. For this reasonwhen additional data and program are requiredit is possible to receive a supplement from the collection office 14 or a service station through this communication control meansand much more expansion can be obtained. If it does in this waythe burden by the side of broadcast will become lightand time to accumulate and collect multiplex broadcasting data can be managed in a short time.

[0043]When requiring the comment of still more detailed stock information for pay as a case where data and the program of such an addition are requiredstill more advanced game (quiz) software may be required for pay. When the quiz currently carried outfor example by the teletext program is all considered as a correct answera system can be further constituted to shift to the following step so that online connection can be changed or chosen as online connection.

[0044]Drawing 6 shows the example of further others of the menu screen of a

teletext program. Drawing 6 (A)drawing 6 (B)and drawing 6 (C) are the examples superimposed to TV footage etc. In the case of drawing 6 (A) and drawing 6 (B)by operating the determination button of the remote control700# of a teletext is received automatically and it comes to be displayed. In the example of drawing 6 (C)it points to the item of hope with the cursor of a remote controland by operating a determination buttonit is received automatically and the teletext of hope comes to be displayed. Thusit becomes possible to provide by hope of the detailed information relevant to a TV programand a televiewerwithout making it conscious [especially a teletext]. Thusit can be interactively operated through a menu to various genresand effect use of the data broadcasting can be carried out. It changes to an on-line service still like drawing 6 (D)and information can be acquired. It is also possible to connect with an on-line service general as this database besides the specific information server linked to the broadcasting stationthe host computer of personal computer communicationsetc.

[0045]Since a menu content can be checked through broadcast even if it actually connects with a circuit and does not see a menu when it information needed not only can obtain interactivelybut uses especially an on-line service if needed by thisIt is economical and an information service can be widely transmitted to a user.

[0046]

[Effect of the Invention]According to this inventionas explained abovethe execution means of a computer program is utilized effectivelythe selection operation of a teletext program is easyand functional expansion of a teletext digital disposal circuit can be obtained.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]The figure showing the example of the system by which the data

processing device using the television broadcasting of this invention was applied.

[Drawing 2]The figure showing an example of the embodiment using the television broadcasting of this invention of a data processing device.

[Drawing 3]A teletext signal and a data-broadcasting signal-description figure.

[Drawing 4]The flow chart shown in order to explain the example of the device of this invention of operation.

[Drawing 5]The explanatory view showing the example of a teletext program menu screenand the example of the translation table of program selection information.

[Drawing 6]The figure showing the example of further others of a teletext program menu screen.

[Description of Notations]

11 [-- Collection office] -- A television receiver12 -- A broadcasting station13 -- A telephone network14 22 [-- Data incorporation and an error correcting section] -- A synchronizing separation part23 -- An A/D converter24 -- A waveform equalization section25 26 [-- Character font ROM] -- Buffer RAM27 -- CPU28 -- Program ROM29 31 [-- A D/A converter37 / -- Operational input I/F38 / -- A modem39 / -- A line connection part41 / -- Work RAM42 / -- Program RAM43 / -- Nonvolatile memory.] -- A display control part32 -- Display memory33 -- A color map memory34